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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,261	07/15/2005	Vincent Gerat	15136NP	3464
293 7590 08/19/2009 DOWELL & DOWELL P.C. 103 Oronoco St. Suite 220 Alexandria, VA 22314				
EXAMINER				
FIGUEROA, JAIME				
ART UNIT		PAPER NUMBER		
3664				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/542,261

**Applicant(s)**

GERAT ET AL.

**Examiner**

Jaime Figueroa

**Art Unit**

3664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Receipt is acknowledged of Applicant's arguments / remarks filed on May 22, 2009, claims 1-13 are pending and an action on the merits is as follows.-

Applicant's arguments with respect to claims 1 - 13 have been considered but are moot in view of the new ground(s) of rejection. Applicant has amended claims 1 - 13.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 2, 5 - 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Onoue (US 6,208,104).**

**Regarding claim 1 (currently amended),** Onoue discloses a multi-axis robot (Fig. 1: robot 600) comprising an arm (Fig. 1: arms 613 - 615) for moving a tool in space and actuate by electric motors (Fig. 3: motor unit 617) and a control system (see Fig. 1 & 2 for robot control system) including:

at least one digital interface (Fig. 3: interfaces 104, 105, 208, 209, 503) having at least one position sensor associated with the arm and being adapted for serializing an output signal therefrom (Col. 2, lines 49 – 67, Col.7, lines 11 – 15, Col. 7, lines 16 – 26);

at least one power module (Fig. 3: power unit 508) for supplying power to the motors (motors 617) (Col. 7, lines 16 – 26);

a control unit (Fig. 1 – 3: robot controlling computer 100) associated with at least one calculation and processing unit (Fig. 1 – 3: robot operating computer 200) used to compute a path of the arm (arms 613 - 615) and generate control signals for the at least one power module (power unit 508), and the at least one calculation and processing unit (robot operating computer 200) (Col. 7, lines 16 – 46);

link means (Fig. 1 - 3: buses 400, 520, 601 & a long bus in servo unit 500) between the arm (arms 613 - 615), the at least one power module (power unit 508), the control unit (robot controlling computer 100) and the at least one digital interface (interfaces 104, 105, 208, 209, 503), permitting at least the control of motors (motors 617) and the transmission of feedback signals from the arm (arms 613 - 615) (see links in Fig. 3) (Col. 6, lines 35 – 57, Col. 7, lines 27 – 46); and

a single functional bus (B) (Fig. 3: see below) enabling the at least one power module (power unit 508) to be controlled by the at least one calculation and processing unit (robot operating computer 200) and feedback signals transmitted from the arm (arms 613 - 615) to the control unit (robot controlling computer 100) and/or the at least one power module (power unit 508), at a frequency of the single functional bus, and the single functional bus being formed by at least one structural bus and the functional bus linking the control unit (robot controlling computer 100) to the at least one power module (power unit 508) and the at least one digital interface (interfaces 104, 105, 208, 209, 503) (see Fig. 1 – 4), (Col. 1, lines 40 – 55, Col. 7, lines 27 – 46, Col. 8, lines 1 – 13).

**Regarding claim 2 (currently amended)**, Onoue discloses the robot, wherein the single functional bus (B) includes at least two structural buses (Fig. 1 - 3: buses 400, 520, 601 & a long bus in servo unit 500):

a first structural bus (bus 520) linking the control unit (robot controlling computer 100) to the at least one power module (power unit 508) (see Fig. 1 - 4); and

a second structural bus (bus 400) linking the control unit (robot controlling computer 100) to the at least one digital interface (interfaces 104, 105, 208, 209, 503) (see Fig. 1 - 4).

**Regarding claim 5 (currently amended)**, Onoue discloses, wherein the control unit (robot controlling computer 100) is linked to the at least one calculation and processing unit (robot operating computer 200) by a PCI type bus (see Fig. 3), (disclosing the use of a multiple PCI type bus connections, as per Col. 7, lines 35 - 37 and Col. 9, lines 62 - 63).

**Regarding claim 6 (currently amended)**, Onoue discloses the robot, wherein the control unit (robot controlling computer 100) is incorporated in the at least one calculation and processing unit (robot operating computer 200) (see Fig. 2, showing the unit 100 inside unit 200) (Col. 6, lines 55 - 57).

**Regarding claim 7 (currently amended)**, Onoue discloses the robot, including an identification and calibration card (Fig. 1 - 3: teaching unit 501) incorporated in the functional bus (B) (see Fig. 1 - 3), (Col. 6, lines 35 - 57).

**Regarding claim 8 (currently amended)**, Onoue discloses the robot, wherein each structural bus is designed to be extended by additional connection means to

interact with at least one external unit for processing information (Fig. 5 - 6: remote operating computer 300) (Col. 8, lines 40 – 67, Col. 9, line 44 to Col. 10 line 26).

**Regarding claim 9 (currently amended)**, Onoue discloses the robot, wherein the link means (Fig. 1 - 3: buses 400, 520, 601 & a long bus in servo unit 500) also includes a power conductor (Fig. 3: link 601A) linking the at least one module (power module 508) to the arm (arms 613 - 615), independently of the functional bus (B) (see Fig. 2 - 3 for links / buses connections).

**Regarding claim 10 (currently amended)**, Onoue discloses the robot, wherein the first structural bus is connected to a plurality of power modules (power unit 508), each dedicated to a separator motor of the robot (robot 600) (see Fig. 2 - 3 for links / buses connections).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onoue (US 6,208,104).**

**Regarding claim 3 (currently amended)**, Onoue discloses as discussed in claim 2. Onoue is silent to disclose, wherein the first structural bus is a metallic bus (B1), made of copper.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the metallic bus made of copper, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious mechanical design expediency. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize copper buses in the robot control unit of Onoue, since such a modification would have allowed for greater conductivity.

**Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onoue (US 6,208,104) in view of Müller (US 4,794,513).**

**Regarding claim 4 (currently amended)**, Onoue discloses as discussed in claim 1. Onoue fails to disclose, wherein the second structural bus is an optical fiber bus (B2). However, Müller teaches a second structural (B2) bus is a lightguide bus (optical fiber bus) (Fig. 1: bus 31), (Col. 2, lines 11 – 16, Col. 2, line 50).

Therefore, It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the lightguide bus of Müller with the robot control unit of Onoue, since such modification would have allowed for greater conductivity and a fewer number of transmission lines will be used.

**Regarding claim 13 (currently amended)**, Onoue discloses as discussed in claim 1. Onoue is silent to disclose the robot, the at least one digital interface is incorporated in the arm.

However, Muller teaches the robot (robot 10) having the at least one digital interface (transducer 18) is incorporated in the arm (see Fig. 1, Col.2, lines 30 – 41, Col. 2, line 64 to Col. 3, line 9).

Therefore, It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Müller with the robot control unit of Onoue, since such modification would have provided a position control system, in which electrical pulses with a high frequency are supplied by actual position and speed transmitters in each joint of the robot arm.

**Claim 11 and 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onoue (US 6,208,104) in view of Niedermayr (US 4,611,296).**

**Regarding claim 11 (currently amended),** Onoue discloses as discussed in claim 1. Onoue discloses the robot, the at least one digital interface (interfaces 104, 105, 208, 209, 503) is an interface card (interface card 503) for computing the speed and/or the acceleration of the movement measured by an associated sensor (encoder unit 618) (see Fig. 3), (Col. 2, lines 54 – 67).

Onoue is silent to disclose, serializing its output signal and, digitizing the output signals of the associated sensor when they are analog.

Niedermayr teaches the interface unit for serializing its output signal and, digitizing the output signals of the associated sensor when they are analog (see Fig. 4), (Col. 2, lines 29 – 33, Col. 6, lines 16 – 47).



Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Niedermayr with the robot control unit of Onoue, since such modification would have the benefit of permitting utilization of sensors having an analog output for complex assembly task with low outlay.

**Regarding claim 12 (currently amended)**, Onoue discloses as discussed in claim 1. Onoue is silent to disclose, the at least one digital interface (interfaces 104, 105, 208, 209, 503) is incorporated in an associated sensor (encoder unit 618), as well as for computing a speed and an acceleration of the movement measured by the associated sensor (encoder unit 618), serializing its output signal and, digitizing the output signal of the associated sensor when it is analog.

Niedermayr teaches the interface (ADU interface A/D) is incorporated in the associated sensor (PSI programmable Sensor Interface) and is for computing the speed and the acceleration of the movement measured by said sensor, serializing its output signal and, where appropriate, digitizing the output signal of said sensor when it is analog. (see Fig. 4 - 6) (Col. 6, lines 16 – 47).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the interface in the associated sensor, as taught by Niedermayr, with the robot control means of Onoue, since such modification would have been to make the device more efficient and reliable.

### ***Response to Arguments***

In the Applicant's arguments filed on May 22, 2009, with respect to the rejections of claims 1 - 13 under 35 U.S.C. 102(b) and 103(a) as being unpatentable over Onoue (US 6,208,104), Muller (US 4,794,513) and Niedermayr (US 4,611,296) have been fully considered and respectfully acknowledged.

Regarding Applicant's arguments, the Applicant is kindly invited to consider the new ground of rejection. References are to be interpreted as by one of ordinary skill in the art rather than as by a novice. See MPEP 2141. Therefore, the relevant inquiry when interpreting a reference is not what the reference expressly discloses on its face but what the reference would teach or suggest to one of ordinary skill in the art.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaime Figueroa whose telephone number is (571)270-7620. The examiner can normally be reached on Monday thru Friday, 7:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi H. Tran can be reached on 571-272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jaime Figueroa/  
Examiner, Art Unit 3664

/Dalena Tran/  
Primary Examiner, Art Unit 3664